

the *Calluna* maintains its dominance over both the grasses and the lichens.—  
GEO. D. FULLER.

**The variable desert.**—Writing in semipopular language, HARRIS<sup>32</sup> has described the wide variation of climatic and other factors influencing plant life in the desert region of Tucson, Arizona, in such a way as to give a more graphic and living picture of this most interesting region than will be found in other more voluminous and technical reports. The wide variation of precipitation from year to year and from month to month is made clear by a diagram, while the large proportion of waste of the scanty water supply is emphasized. The wide range of temperature during both the year and the day, the almost infinite variety of plant forms, extending from thin to thick-leaved herbs, from broad-leaved to leafless shrubs, and from succulent to woody plants with varied aspect at different seasons of the year, are all clearly depicted. In a word, the reader is made to appreciate some of the complexity of environment and diversity of organisms which have rendered this region so fascinating to the intelligent layman and to the investigating scientist.—GEO. D. FULLER.

**Ecology of lichens.**—In connection with a systematic study of the lichen flora of South Lancashire, WHELDON and TRAVIS<sup>33</sup> discuss some of the factors detrimental to the growth of these plants. Particular attention is directed to their sensitiveness to pollution of the atmosphere by the smoke and chemical fumes attendant upon the development of a manufacturing industry. The observations are of a general rather than of a particular character and are not accompanied by any experimental data. They also note that a calcareous substratum seems to counteract the effect of smoke upon the lichens. The selective action of these plants is well illustrated by the group of species peculiar to the carboniferous limestone.—GEO. D. FULLER.

**Tolerance of trees.**—After making studies of light in the forests of Michigan and Vermont and its effect upon the growth, BURNS<sup>34</sup> concludes that "tolerance" used to express a light relationship should no longer be used in reference to the development of tree seedlings. He found the filtered light in the forest of little value in the decomposition of carbon dioxide compared with the weakened white light. What is usually regarded as a light relationship is really the total relationship of a tree to all factors of the habitat. He further concludes that light readings in the forest are of little value.—GEO. D. FULLER.

<sup>32</sup> HARRIS, J. ARTHUR, The variable desert. *Scientific Monthly* 3:41-49. 1916.

<sup>33</sup> WHELDON, J. A., and TRAVIS, W. G., The lichens of South Lancashire. *Jour. Linn. Soc.* 43:87-136. 1915.

<sup>34</sup> BURNS, G. P., Studies in tolerance of New England forest trees. III. Discontinuous light in forests. *Vt. Agric. Exp. Sta. Bull.* 193. pp. 23. 1916.